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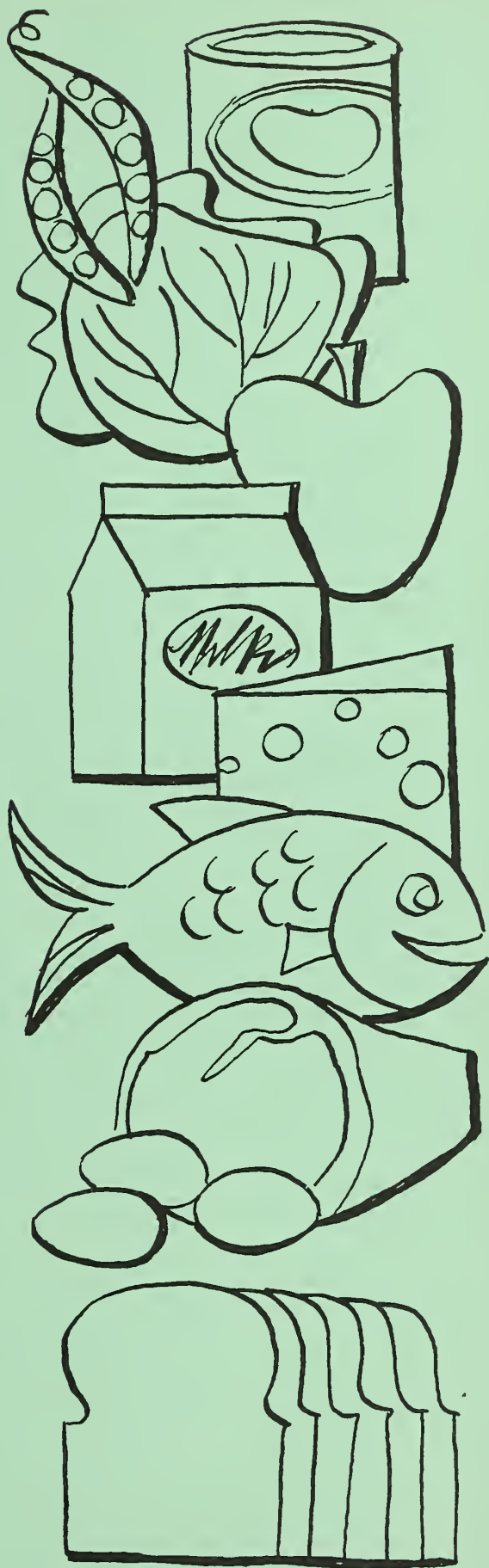


# FOOD and NUTRITION...

supplemental  
lessons for  
training  
extension aides

## KEY NUTRIENTS

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## LESSONS - KEY NUTRIENTS

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Key Nutrients is one of a series of booklets of supplemental lessons in food and nutrition, designed for use in on-the-job training of Extension aides. These lessons are not intended to be complete teaching units. The purpose is to enrich the aides' background in food and nutrition and to provide practical teaching methods that they can use in taking food and nutrition information to families. Since technical subjects in nutrition are simplified some of the generalizations may have exceptions.

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## FOOD AND NUTRITION

### Supplemental Lessons for Training Extension Aides

#### KEY NUTRIENTS

##### Purpose

These lessons were written to help trainer agents further prepare aides for work with families in the Food and Nutrition Education Program. It is the responsibility of the trainer agent to see that aides have a broad perspective of the importance of food to people, a basic understanding of nutrition and an understanding of how to teach this information to low-income families.

The series follows the 15 basic lessons in nutrition given in the initial training for aides and leaders and will help the trainer agent enlarge the background nutrition knowledge of the aides. The series is an expansion of Lesson 3 - Key Nutrients from Food and Nutrition--basic lessons for training Extension aides and should be applied to the problems the aides have identified. The information may be used by the aide as the occasion arises in her work with families and the lessons adapted by the aide for use with groups of youth or adults.

##### TRAINER AGENT'S RESPONSIBILITY

References are suggested for the agent's use with each lesson. The agent will find it helpful to assemble these references before starting the lessons and to use them in her preparation for teaching.

References are also suggested for the aide's use. The agent should be selective in the references she gives to aides. Order those selected well in advance.

Go over references thoroughly with the aides so that they know what is in each reference.

Professional people in related fields may be asked to participate in training meetings. Such participation should be planned well in advance.

A working relationship with each aide should already be established as a result of the initial training period. Effective communication remains vital in teaching. Before teaching supplemental lessons, the trainer agent may wish to review purposes of the training and the importance of aides' participation.

Suggested check list to be sure that all necessary preparations for the in-service training sessions have been made:

\_\_\_ Meeting place with necessary facilities has been obtained.

\_\_\_ All references needed to complete the lessons have been assembled.

\_\_\_ Local public health service and library have been checked for additional references.

\_\_\_ All visual materials and equipment needed to teach the lessons are on hand.

\_\_\_ All reference materials needed for the aides have been obtained.

\_\_\_ All lesson plans have been carefully studied so that you fully understand the overall content of the course.

\_\_\_ Sufficient time has been allowed to complete each lesson.

#### ADAPTING THE LESSONS TO YOUR AIDES

Guides used in teaching the basic lessons should be followed in teaching the supplemental lessons also:

Adapt training classes to meet the needs of your group. Here are some ideas to keep in mind:

1. Simplify. Do not try to cover too much material in one lesson. Pick out the most important points and emphasize these.
2. Use colorful visuals and a dynamic presentation to help make the lesson more appealing.
3. Emphasize good nutrition elements in the food the aides are now eating. Point out how small changes can often result in a more balanced diet.



4. Involve the aides in the training meetings in as many ways as possible.

#### EXTENDING INFORMATION

The information given in the supplemental lessons may be effectively used in other ways, such as adaptation for use in training volunteer leaders or in newsletters or newspaper articles. A series of radio or TV programs based on the lessons may help to extend to a larger audience the ideas that aides are promoting.

## Recommended publications

For aides and leaders

Publications and visual materials are listed with each lesson. Make sure that these supplies are on hand before you begin teaching.

### USDA

Bulk quantities of USDA pamphlets are usually obtained through your State distribution officer.

Family Fare, G-1

Milk in Family Meals, G-127

Nutritive Value of Foods, G-72

\*Key Nutrients, PA-691 (5¢)

\*How Food Affects You (flipchart in booklet form)  
1970. 32 pages. (60¢)

\*Composition of Foods, Agricultural Handbook No. 8. \$1.50.

\*Daily Food Guide Leaflet, F&NS-23 (35¢ for 10 copies)

Food for Thrifty Family flyers, F&NS

Free illustrated F&NS flyers and the Daily Food Guide are available for educational programs relating to U.S. Department of Agriculture's Family Food Assistance Programs through your regional Food and Nutrition Service office.

### HEW

The Food You Eat and Heart Disease, No. 537

Copies of publications from Department of Health, Education and Welfare may be obtained locally from the Public Health Service or purchased from the Superintendent of Documents.

\*Publications NOT available free may be purchased from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, at the prices indicated. There is a 25 percent discount for 100 or more copies on all GPO orders.



## Recommended references

### For trainer agents

Each lesson includes a list of recommended reference books and publications for trainer agents to use in preparing lessons. Make sure you have the references you need to do a good job.

Eat to Live, Wheat Flour Institute, 14 E. Jackson Blvd., Chicago, Ill. 60604. 1969. \$1.00.

Food, USDA Yearbook of Agriculture, 1959. \$3.25. Supt. of Documents, Government Printing Office, Washington, D.C. 20402.

Food, A Key to Better Health, Nutrition Foundation, Inc. 1970. Order from Colson Co., Paris, Ill. 61944. 25¢.

Food and Nutrition---basic lessons for training Extension aides. Extension Service, USDA.

Food Becomes You, Leverton, Ruth; Dolphin Books, Doubleday Co., Inc., 501 Franklin Ave., Garden City, N.J. 11530. 1961. \$0.95. Hardcover edition: Iowa State Press, Ames, Iowa 50012. 1965. \$4.95.

Food For Us All, USDA Yearbook of Agriculture, 1969, \$3.50. Supt. of Documents, Government Printing Office, Washington, D.C. 20402.

Fundamentals of Normal Nutrition, Robinson, Corinne H.; Macmillan Co., 866 3rd Ave., New York, N.Y. 10022. 1968. \$7.95.

Introduction to Nutrition, Fleck, Henrietta and Munves, Elizabeth; Macmillan Co., 866 3rd Ave., New York, N.Y. 10022. 1962. \$7.50.

Learning Better Nutrition: A Second Study of Approaches and Techniques, Ritchie, Jean A.S.; FAO, Unipub, Inc., P.O. Box 433, New York, N.Y. 10010. 1967. \$4.00.

Nutrition Handbook for Family Food Counseling, National Dairy Council, 111 North Canal St., Chicago, Ill. 60606. 30¢.

Nutrition in Action, Martin, E.A., Holt, Rinehart & Winston, Inc., 383 Madison Ave., New York, N.Y. 10017. 1965. Teacher's Guide. \$6.50.

Principles of Nutrition, Wilson, Eva D. and others; John Wiley and Sons, Inc., 605 3rd Ave., New York, N.Y. 10016. 1965. \$8.50.

Teaching Nutrition, Eppright, E. and others; Iowa State Press, Ames, Iowa 50012. 1963. \$4.95.

## Visuals

### Slide Sets

- "How Food Affects You," C-156. 1969. 48 frames. \$8.00.  
"Milk the Magnificent," C-161. 1969. 50 frames. \$8.00.

USDA slide sets may be purchased from the Photography Division, Office of Information, U.S. Department of Agriculture, Washington, D.C. 20250.

### Charts and Posters

How Food Affects You (flip chart in booklet form). 1970.  
32 pages color. 60¢. Superintendent of Documents.

\*Daily Food Guide Poster, 22" x 28". 15 cents per copy.

### National Dairy Council

- Comparison Cards for Adults. B-43-A. \$2.50 a set.  
Food Models B-12. \$3.00 a set.  
Display for Food Models. G-100. \$1.50.  
Milk Made the Difference. Poster P-512. 30 cents.

A catalogue can be obtained listing available materials. If you live in a city where there is an affiliated Dairy Council Unit, requests for material should be directed to that office. If you are not served locally, send orders to National Dairy Council, 111 North Canal Street, Chicago, Ill. 60606.

### Wheat Flour Institute

Wall chart on Wheat Kernels.

## KEY NUTRIENTS

### Lesson 1: PROTEIN

#### PURPOSE

Trainer agent to help aides:

1. Learn how the body uses protein.
2. Learn food sources of protein.
3. Learn the importance of and methods for supplementing vegetable protein with animal protein.

#### PRESENTATION

- . Review lesson 5 of Food and Nutrition---basic lessons for training extension aides by discussing the concept that foods may be classified as protein, carbohydrates, and fats. Most foods are a combination of nutrients. Vitamins, minerals and water are found in combination with these classes of food.
- . Have aides identify parts of their body which are made of protein. You can see some of these parts--muscles, skin, hair, nails, eyes. Much of what you do not see is also made of protein--blood, heart, nerves, brain and others.
- . Show aides how to use visuals in teaching the function of protein in the body. Use charts 4-8 from the booklet "How Food Affects You" or slides 16 and 17 of the set with the same title. Explain that protein:
  - Builds and maintains all tissues.
  - Forms an important part of enzymes. Enzymes are substances that break our food down so that it can be digested and used in the body.
  - Forms an important part of many hormones. Hormones regulate body processes.

- Forms an important part of body fluids. Next to water, protein is the most plentiful substance in the body.
- Supplies energy.
- . Have aides identify food sources of protein. Use food models to group proteins into animal and plant sources:

Animal Sources

lean meat  
poultry  
fish  
seafoods  
eggs  
milk  
cheese

Plant Sources

dry beans  
peas  
nuts  
cereals  
breads

- . Point out which of the four food groups contribute protein to the diet and which group makes the greatest contribution of protein. Refer to Daily Food Guide.
- . Include these points in your discussion:
  - Animal sources of protein are of better quality than plant sources.
  - Protein is made up of smaller parts called amino acids. These are referred to as the building blocks of protein.
  - Some amino acids can be made in the body from other amino acids. However, some amino acids cannot be made in the body, and therefore must be supplied in food. These are called essential amino acids.
  - Animal protein sources contain more of the essential amino acids needed to build cells for the human body than plant protein sources do. Because animal protein has more amino acids needed by the body, it is of better quality than plant protein.

- Plant protein eaten in combination with a small amount of animal protein improves the nutritional value of the diet.
- . Use the Daily Food Guide to illustrate the recommended number of servings of meat or meat alternates. Point out that protein foods should be eaten throughout the day so that the essential amino acids may be most effectively utilized in the body. Explain that protein eaten in excess of body needs will be converted to fat in the body.
- . Have aide list protein foods she eats. Have the aide suggest animal protein foods that can be eaten in small amounts in combination with those foods that are vegetable protein to improve the nutritional quality such as:
  - cereal and milk
  - beans and cheese
  - beef and rice

#### APPLICATION OF LESSON BY AIDES

Aides help homemaker recognize that there are many protein foods in addition to meat. Protein is supplied from vegetable sources and only small amounts of animal protein need be added to improve the quality.

Aides suggest combinations of animal and vegetable protein foods to homemakers.

Aides encourage homemakers to eat some protein foods at each meal.

#### REFERENCES FOR TRAINER AGENT

1. Food, Yearbook of Agriculture, 1959, USDA, pp. 57-63.
2. Eat to Live, Wheat Flour Institute, p. 16.

## VISUALS AND EQUIPMENT

"How Food Affects You", slide set, C-156, USDA.

Projector and screen.

Daily Food Guide, F&NS 23, USDA.

Food Models, National Dairy Council.

How Food Affects You, flip charts, USDA.

## REFERENCES FOR AIDES

1. How Food Affects You, flip charts, USDA.
2. Key Nutrients, PA-691, USDA.
3. Family Fare, G1, USDA, pp. 7-8.



## KEY NUTRIENTS

### Lesson 2: CARBOHYDRATES

#### PURPOSE

Trainer agent to help aides:

1. Learn how the body uses carbohydrates.
2. Learn food sources of carbohydrates.
3. Understand the significance of empty-calorie foods.

#### PRESENTATION

- . Review lesson 5 of Food and Nutrition--basic lessons for training extension aides by discussing the concept that all foods may be classified as protein, carbohydrates, and fats, and that all supply energy in varying amounts. Vitamins, minerals and water are found in combination with these classes of food.
- . Show aides how to use visuals in illustrating the function of carbohydrates in the body. Show slides 32-33 from "How Food Affects You" or chart 28 from the flip charts. Emphasize that carbohydrates:
  - Supply food energy.
  - Help the body use fat efficiently.
  - Spare protein for purposes of body building and repair.
- . Point out that carbohydrates are made up of sugar and starches. A starch is a complex made up of units of sugars.

- . Illustrate the food sources of carbohydrates using food models:

Sugars

honey  
molasses  
syrup  
sugar

Starches

bread  
cereals  
corn  
grits  
potatoes  
rice  
spaghetti  
macaroni  
noodles

- . Point out the food groups that make the largest contribution of carbohydrates. Refer to the Daily Food Guide.
- . Include these points in your discussion:
  - Carbohydrates are the main source of energy for the peoples of the world because they are found in plentiful and economical foods.
  - Many carbohydrate foods are empty-calorie foods. An example is sugar. Stress eating carbohydrate foods that contain other valuable nutrients.
  - A small amount of carbohydrates is stored in the body. However, if carbohydrates are eaten in great excess of energy needs, the excess will be stored as fat in the body.
- . Have aides select several dietary recalls from their lists of homemakers. Evaluate the dietary intake of carbohydrates, watching for the inclusion of important nutrients -- protein, vitamins and minerals -- in the foods also.

APPLICATION OF LESSON BY AIDES

- . Aides understand what empty-calorie foods are and how to substitute other nutritious foods for them.

- . Aides encourage homemakers to select carbohydrate foods that contain vitamins and minerals.

#### REFERENCES FOR TRAINER AGENT

1. Food, Yearbook of Agriculture, 1959, USDA, pp. 88-100.

#### VISUALS AND EQUIPMENT

"How Food Affects You," slide set, C-156, USDA.

Projector and screen.

Daily Food Guide, F&NS 23, USDA.

Food Models, National Dairy Council

How Food Affects You, flip charts, USDA.

#### REFERENCES FOR AIDES

1. How Food Affects You, flip charts, USDA.
2. Key Nutrients, PA-691, USDA.
3. Food - A Key to Better Health, Nutrition Foundation,  
p.5.
4. Family Fare, G1, USDA, p. 9.

## KEY NUTRIENTS

### Lesson 3: FAT

#### PURPOSE

Trainer agent to help aides:

1. Learn the function of fat in the diet.
2. Learn food sources of fat.
3. Understand the meaning of polyunsaturated fats.

#### PRESENTATION

- . Review lesson 5 of Food and Nutrition---basic lessons for training Extension aides by discussing the concept that all foods may be classified as protein, carbohydrates, and fats, and that all supply energy in varying amounts. Vitamins, minerals and water are found in combination with these classes of food.
- . Discuss the function of fats in the body. Show slides 32-34 from "How Food Affects You" or chart 28 from flip charts, showing aides how to use visuals in teaching homemakers. Emphasize that fats:
  - Supply energy in compact form (weight for weight, fats supply twice as much energy as carbohydrates).
  - Supply some essential fatty acids.
  - Help the body use certain other nutrients. (Fats are carriers of fat soluble vitamins A and D.)
  - Add variety and flavor to many foods.
  - Protect the body from excessive loss of heat.
  - Support and protect vital organs.

- . Show a bottle of oil and a can of solid fat. Ask aides if they know the difference in these food items.
  - Both are fats.
  - Oils are liquid fats at room temperature, solid fats are solid at room temperature.
  - Liquid oils are generally made from vegetable sources. Most vegetable oils are highly polyunsaturated. This refers to the type of fatty acids in the oil.
  - Solid fats are predominately made from animal sources and contain mostly saturated fatty acids. However, many times polyunsaturated fats are added to solid fats.
- . Have aides read several can and jar labels to see if polyunsaturated fatty acids are contained in the fat or oil.
- . Briefly mention research that has shown there may be a relationship between a highly saturated fat (animal) intake and incidence of heart disease. There have been recommendations to increase the proportion of polyunsaturated fats in the diet for people with certain kinds of heart ailments.
- . Discuss the function of fats in the body. Show slides 32-34 from "How Food Affects You" or chart 28 from the flip chart.
- . Illustrate the food sources of fats using food models, pictures or cartoons:
  - fat in meat
  - lard
  - cooking fats and oils (foods cooked in them)
  - butter
  - margarine
  - salad dressings
  - salt pork and bacon drippings

- . Point out that normal persons should have some animal and vegetable fat in the diet each day. Fats eaten in excess of body needs are stored as fat in the body.
- . Have aides tell how they would teach homemakers the meaning of the term polyunsaturated found on the label from a can of shortening.

#### APPLICATION OF LESSON BY AIDES

Aides encourage homemakers to select fat foods that also contain vitamins and minerals.

#### REFERENCE FOR TRAINER AGENT

1. Food, Yearbook of Agriculture, 1959, USDA, pp. 74-87.
2. Food for Us All, Yearbook of Agriculture, 1969, USDA, pp. 226-231.
3. The Food You Eat and Heart Disease, No. 537, U.S. Department of Health, Education and Welfare, Public Health Service.

#### VISUALS AND EQUIPMENT

"How Food Affects You" slide set, C-156, USDA.

Projector and screen.

Food Models, National Dairy Council.

Jars and cans of vegetable and animal oil and fats.

How Food Affects You, flip chart, USDA.

#### REFERENCES FOR AIDES

1. How Food Affects You, flip chart, USDA.
2. Key Nutrients, PA-691, USDA.
3. Food - A Key to Better Health, Nutrition Foundation, p. 5.
4. Family Fare, G1, USDA, p. 9.



## KEY NUTRIENTS

### Lesson 4: CALCIUM

#### PURPOSE

Trainer agent to help aides:

1. Understand how the body uses calcium.
2. Learn the food sources of calcium and ways to get the recommended amounts each day.

#### PRESENTATION

- . Review information, pointing up the need to emphasize calcium in teaching homemakers.
  - Refer to the review of the 1965 Food Consumption Study in Food For Us All, pp. 266-272.
- . List on the board, the groups of people who are not likely to get the recommended amounts of calcium in their diets.
  - teenagers
  - adults
  - older folks
- . Point out that calcium is a mineral. Minerals help build the body structure and help regulate many processes in the body. Calcium is the substance found in ordinary blackboard chalk, limestone, road rock, sea shells, and bones.
- . Discuss the function of calcium in the body. Use illustrations in "How Food Affects You" flip charts, pages 8, 9 and 10, or slides 19 and 20 from series by same title. Ask the aides to review Key Nutrients for a summary of functions and sources of calcium.

. Explain that:

- Calcium is distributed unevenly in the body -- 99% is found in bones and teeth; 1% is found in the fluids and soft tissues.
- Calcium helps in muscle contraction, nerve transmission, blood clotting, and beating of heart.

. Show pictures of animals from "Milk Made the Difference" and discuss. Show slides 4-12 from the "Milk the Magnificent" slide set. Show aides how to use visuals in working with homemakers.

. Point out that:

- The best sources of calcium are milk and milk products. It is difficult to supply the amounts of calcium recommended unless milk in some form is used daily.
- Ask aide to name the major nutrient contributions of the milk group. List them on board or newsprint:
  - calcium
  - protein
  - riboflavin
- Milk products add variety to meals and snacks and can be used in place of some of the milk which would be drunk. Use comparison cards, food models, or actual food to show these calcium equivalents of one cup of fluid milk:

1 1/3 oz.	cheddar
1 1/3 cups	cottage cheese
1 cup	cocoa made with milk
1 cup	custard
1 1/2 cups	ice cream
3/4 cup	macaroni and cheese

- . Show amounts of milk recommended in the Daily Food Guide to help supply calcium:

Children under 9	2-3	8 oz.-cups or equivalent (or more)				
Children 9-12	3	"	"	"	"	"
Teenagers	4	"	"	"	"	"
Adults	2	"	"	"	"	"
Pregnant women	3	"	"	"	"	"
Nursing mothers	4	"	"	"	"	"

- . Discuss other food sources of calcium such as:
  - dried peas and beans
  - collards, kale
  - dandelion, mustard, and turnip greens
  - canned salmon and mackerel
  - enriched breads made with milk or dry milk solids
- . Emphasize that young children need calcium because their bones are growing. Older persons need calcium to keep their bones hard and strong.
- . Ask aides to review a few of the food recalls from homemakers to evaluate the milk intake.
- . Have aides role-play a visit with a homemaker who does not use milk because she believes it is too expensive.
- . Have an aide prepare a flavored milk drink using dry milk. Serve this for refreshments. Suggest ways of adding dry milk to foods to increase calcium intake.

- . Have aides identify foods that are high in calcium from a list. Look up calcium content in Nutritive Value of Foods G-72 and report back. Suggested list:

apple  
bacon  
dry beans  
green snap beans  
bread, enriched  
liver  
broccoli  
butter  
cabbage  
carrots  
cream cheese  
chocolate milk  
corn  
clams  
crab meat  
eggs  
ice cream  
skim milk  
oyster stew  
green pepper  
spinach  
canned salmon

#### APPLICATION OF LESSON BY AIDES

Aides encourage children to drink more milk by teaching their mothers to prepare flavored milk drinks and frozen snacks.

Aides use "How Food Affects You" flip charts and "Milk Made the Difference" pictures with homemakers to teach the importance of the milk group.

#### REFERENCES FOR TRAINER AGENT

1. Food, Yearbook of Agriculture, 1959, USDA, pp. 112-118.
2. Principles of Nutrition, Wilson, Fisher, and Fuqua, pp. 134-155.
3. Nutrition in Action, Martin, pp. 88-102.

4. Food For Us All, Yearbook of Agriculture, 1969, USDA, pp. 266-272.
5. Nutritive Value of Foods, G-72, USDA.

#### VISUALS AND EQUIPMENT

Food and materials for food preparation.

"How Food Affects You" slide series, C-156, USDA.

How Food Affects You flip charts, USDA.

"Milk the Magnificent" slide series, C-161, USDA.

"Milk Made the Difference" pictures from National Dairy Council.

Slide projector and screen.

Food or food models and comparison cards to show calcium equivalents, National Dairy Council.

Daily Food Guide, F&NS-23, USDA.

Various items containing calcium such as chalk, limestone, bones, sea shells.

#### REFERENCES FOR AIDES

1. Key Nutrients, PA-691, USDA.
2. How Food Affects You flip charts, USDA.
3. "Milk Made the Difference" pictures from National Dairy Council.
4. Food-A Key to Better Health, Nutrition Foundation, p. 4.
5. Family Fare, G1, USDA, p. 10.

## KEY NUTRIENTS

### Lesson 5: IRON

#### PURPOSE

Trainer agent to help aides:

1. Understand how the body uses iron.
2. Learn food sources of iron and methods of including iron-rich foods in the diet.

#### PRESENTATION

- . Review the importance of iron and its functions in the body. Emphasize that:
  - Iron deficiency is the most prevalent nutritional disorder among children in the United States.
  - Iron is a mineral like calcium or iodine that our bodies need to function properly.
  - Iron combines with protein in our bodies to form hemoglobin, the red substance in our blood which carries oxygen from the lungs to all parts of our bodies. Body cells must be constantly supplied with oxygen to sustain life.
  - Iron forms part of several enzymes in the body. Enzymes are substances that break food down so that it can be digested and used in the body.
  - Iron is stored in the liver, bone marrow and spleen in the body.
- . Point out that the best sources of iron are:
  - liver and other organ meats
  - dried peas and beans



- egg yolks
- beef, pork, lamb and veal
- . Emphasize that other good sources of iron are:
  - enriched or whole-grain breads and cereals
  - dark green leafy vegetables
  - dried apricots, prunes, raisins
  - molasses
- . Point out that iron content of some food can be increased by cooking in cast iron utensils.
- . Explain that egg yolk is one of the first solid foods added to an infant's diet because milk contains very little iron.
  - Menstruating women require larger amounts of iron because of the periodic loss of blood.
  - Iron-deficiency anemia, which can cause a tired feeling, is due to a lack of iron in the diet. A physician should be consulted to treat anemia.
- . Have several aides use pages 12-14 of the flip chart "How Food Affects You" to discuss with the group how they might use this visual to teach homemakers that iron is a nutrient found in foods that our bodies need to function properly.
- . Have aides prepare, or tell how they have prepared, one or two iron-rich foods, such as organ meat, molasses cookies, a dark green vegetable.
- . Have aides share with the group how they would help homemakers introduce iron-rich foods into their family diets, such as having raisins available for afternoon snacks; using molasses cookies instead of plain cookies; or adding molasses to baked beans.
- . Give aides several menus that lack or are low in foods containing iron. Let them suggest ways to include iron.

## APPLICATION OF LESSON BY AIDES

Aides teach the importance of iron in the diet.

Aides explain ways to include foods containing iron in family diets.

## REFERENCES FOR TRAINER AGENT

1. Food, Yearbook of Agriculture, 1959, USDA, pp. 122-129.
2. Eat to Live, Wheat Flour Institute, pp. 20-21.

## VISUALS AND EQUIPMENT

Foods and materials for food preparation.

How Food Affects You, flip charts, USDA.

## REFERENCES FOR AIDES

1. How Food Affects You, flip charts, USDA.
2. Food - A Key to Better Health, Nutrition Foundation, p. 4.
3. Family Fare, G1, USDA, p. 11.

## KEY NUTRIENTS

### Lesson 6: IODINE

#### PURPOSE

Trainer agent to help aides:

1. Understand how the body uses iodine.
2. To learn the food sources of iodine and the importance of using iodized salt.

#### PRESENTATION

- . Review information pointing up the need to emphasize iodine in teaching homemakers. Emphasize that:
  - Iodine is a mineral, like calcium and iron, that is necessary for our body. Although large amounts are toxic, small amounts of iodine are important for a balanced diet.
- . Discuss the function of iodine in the body:
  - Iodine forms part of the hormone thyroxine which regulates body processes. Thyroxine is made by the thyroid gland which is located in the neck. Thyroxine regulates the rate at which the body produces energy from food. If the activity of the thyroid gland is slow, the body tends to store up energy in fat. If the gland is over active, the body burns up food and body reserves too fast and tends to become thin. Both conditions affect physical and mental health, nerves, rate of heart beat and appetite.
  - Iodine is necessary for maintenance of body processes throughout life.

- . Discuss food sources of iodine, such as:
  - iodized salt
  - shell fish
  - salt water fish
- . Point out that the simplest way to be sure there is enough iodine in the diet is to use iodized salt. Ask how many aides use iodized salt. Compare the prices of iodized and regular salt in the local food stores. Show labels from boxes of both iodized and regular salt.
- . Explain that some persons cannot use iodized salt because they have certain diseases. For those who are healthy, however, iodized salt is recommended.
- . Emphasize that iodine is stored in the thyroid gland in the neck. A simple goiter, which is an enlargement of the thyroid gland, may be caused by insufficient iodine in the diet. Explain that the use of iodized salt is important in the prevention of simple goiter. Ask aides if they have ever known anyone with a goiter.

#### APPLICATION OF LESSON BY AIDES

Aides understand the importance of using iodized salt.

Aides check at local food stores for iodized salt.

Aides compare cost of iodized and regular salt.

Aides encourage homemakers to choose and use iodized salt instead of regular salt.

#### REFERENCES FOR TRAINER AGENT

1. Food, Yearbook of Agriculture, 1959, USDA, pp. 122-129.
2. Eat to Live, Wheat Flour Institute, pp. 21-23.
3. Principles of Nutrition, Wilson, Eva, and others, new edition, Chapter on Iron and Iodine.

#### VISUALS AND EQUIPMENT

Boxes of iodized and regular salt.

Pictures of goiter from nutrition texts.

#### REFERENCE FOR AIDES

1. Family Fare, G1, USDA, p. 11.
2. Food, A Key to Better Health, Nutrition Foundation, p. 5.

## KEY NUTRIENTS

### Lesson 7: VITAMIN A

#### PURPOSE

Trainer agent to help aides:

1. Learn the importance of Vitamin A and how the body uses it.
2. Learn foods containing Vitamin A and how to include them in the diet.

#### PRESENTATION

- . Present a brief overview of the functions and characteristics of vitamins. Emphasize these points:
  - Vitamins are essential for body growth to resist infection, and to keep the body functioning properly.
  - All vitamins needed for good health can be found in food.
  - Vitamins may be classified as fat-soluble or water-soluble. Fat-soluble vitamins can be stored in the body. Water-soluble vitamins cannot be stored in the body to any significant extent. Therefore, foods containing water-soluble vitamins should be eaten every day.
- . Point out the characteristics of Vitamin A. This vitamin is:
  - Fat-soluble and can be stored in the body.
  - Fairly stable to heat.



- . Discuss and show the specific functions of Vitamin A in the body. Refer to flip charts "How Food Affects You" pages 16-18 or slides 24 and 25 in slide set by same title, or to Key Nutrients leaflet.
- . Emphasize that Vitamin A:
  - Helps the eyes adjust to dim light.
  - Helps keep the skin smooth.
  - Helps keep the lining of the mouth, nose, throat, and digestive track healthy and resistant to infection.
  - Promotes growth.
- . Identify and discuss food sources of Vitamin A:
  - Animal sources are the only immediate sources of Vitamin A. Dark green, leafy, or deep yellow vegetables contain a substance called carotene, which is changed into Vitamin A by the body.
- . Ask aides to identify animal sources of Vitamin A from the list of foods in Key Nutrients. Ask aides to explain why liver is high in Vitamin A.
- . Display food sources of Vitamin A using pictures or food models such as:
  - liver
  - dark green leafy vegetables such as spinach  
broccoli, turnip greens, kale, collards
  - deep yellow vegetables such as carrots,  
pumpkin, sweetpotatoes, winter squash
  - apricots
  - cantaloupe
  - egg yolk
  - butter and fortified margarine
  - whole milk and cheese
  - fortified milk and milk products

- . Compare the amounts of Vitamin A in light and dark green leafy vegetables; compare the amounts of Vitamin A in yellow and deep yellow vegetables. Show examples of these vegetables, such as lettuce and broccoli or corn and carrots.
- . Indicate that dark green and deep yellow colors in vegetables usually indicate high Vitamin A value and that they add color and variety to meals.
- . Point out that foods in the fruit and vegetable group are our main sources of Vitamin A. Illustrate with Daily Food Guide.
- . Prepare two foods rich in Vitamin A such as a sweet-potato casserole or a salad made from greens.
- . Have the aides select food recalls from several homemakers and evaluate the diets for Vitamin A content.
- . Have the aides classify several recipes containing Vitamin A-rich foods into "good" and "fair" sources.

#### APPLICATION OF LESSON BY AIDES

Aides explain to homemakers the importance of Vitamin A in the body. Aides teach homemakers ways to include low-cost Vitamin A-rich foods in the diet.

#### REFERENCES FOR TRAINER AGENT

1. Food, Yearbook of Agriculture, 1959, USDA, pp. 130-133.
2. Eat to Live, Wheat Flour Institute, p. 17.

## VISUALS AND EQUIPMENT

"How Food Affects You" slide series, C-156, USDA.

How Food Affects You flip charts, USDA.

Pictures or food models.

Daily Food Guide, F&NS-23, USDA.

Dark green and light green vegetables for comparison.

Dark yellow and light yellow vegetables for comparison.

Food and materials for food preparation.

## REFERENCES FOR AIDES

1. How Food Affects You, flip charts, USDA.
2. Key Nutrients, PA-691, USDA.
3. Food - A Key to Better Health, Nutrition Foundation, p. 4.
4. Family Fare, G1, USDA, p. 12.

## KEY NUTRIENTS

### Lesson 8: B-VITAMINS

#### PURPOSE

Trainer agent to help aides:

1. Learn the function of three B-Vitamins:  
- thiamine, riboflavin, and niacin.
2. Learn food sources of these B-Vitamins  
and ways of including them in the diet.
3. Understand the meaning of the terms "enriched"  
and "fortified" when used to describe food.

#### PRESENTATION

- . Show pages 24-26 from flip charts "How Food  
Affects You." Point out that:
  - Vitamin B, once believed to be a single  
nutrient, is now known to be composed of  
many vitamins. Thiamine, riboflavin, and  
niacin are three of these.
  - B-Vitamins are water-soluble and therefore  
cannot be stored in the body. Foods containing  
these vitamins should be eaten every day.
- . Discuss functions of B-Vitamins:
  - Thiamine helps body cells obtain energy  
from food, helps keep nerves in healthy  
condition, and promotes good appetite  
and digestion.

- Riboflavin helps cells use oxygen to release energy from food, helps keep eyes healthy, and helps keep the skin around mouth and nose smooth.
- Niacin helps body cells use oxygen to produce energy, and helps to maintain the health of the skin, tongue, digestive track and nervous system.
- . List and discuss food sources of B-Vitamins, such as:
  - Enriched and fortified breads and cereals.
  - Meats, dry beans, eggs, milk, leafy vegetables.
- . Show a chart of the wheat grain and discuss its nutritive value. Point out the parts and nutrients that are removed in milling. Explain that, to replace these losses, flour and cereals may be enriched or fortified.
  - Enriched products have thiamine, riboflavin, niacin and iron added in amounts specified by government regulations.
  - Fortified products have thiamine, riboflavin, niacin and iron added in greater amounts than in enrichment. Fortified foods have nutrients added that are not normally in the product, such as Vitamin A in margarine, Vitamin D in milk and iodine in salt.
- . Have aides read and study labels from packages of several enriched or fortified foods and some that are not enriched.
- . Discuss ways of conserving B-Vitamins.
  - Cook cereal in small amounts of water so that nutrients won't be drained off with excess water.
  - Do not wash rice before it is cooked.

- Keep foods containing riboflavin away from the light. Do not leave milk on the doorstep in glass bottles or clear plastic containers.
- Use liquid from cooked meats and vegetables in soups, sauces, and gravies.

Have aides prepare a visual on enrichment that would be meaningful to a homemaker.

#### APPLICATION OF LESSON BY AIDES

Aides check local food stores for enriched and fortified products.

Aides help homemakers understand labels on enriched and fortified products.

#### REFERENCES FOR TRAINER AGENT

1. Food, Yearbook of Agriculture, 1959, USDA, pp. 139-149.
2. Eat to Live, Wheat Flour Institute, pp. 18-19, 30-33.

#### VISUALS AND EQUIPMENT

How Food Affects You, flip charts, USDA.

Daily Food Guide, F&NS-23, USDA.

Labels from bread and cereal boxes, etc.

Wall chart on wheat kernel from the Wheat Flour Institute.

#### REFERENCES FOR AIDES

1. How Food Affects You, flip charts, USDA.
2. Key Nutrients, PA-691, USDA.
3. Family Fare, G1, USDA, p. 13.

## KEY NUTRIENTS

### Lesson 9: VITAMIN C

#### PURPOSE

Trainer agent to help aides:

1. Learn how the body uses Vitamin C.
2. Learn food sources of Vitamin C and how to include Vitamin C food in the daily diet.
3. Learn how to help homemakers understand the importance of including Vitamin C in their diet each day.

#### PRESENTATION

- . Have display of Vitamin C foods. Ask aides what nutrients are found in these foods.
- . Mention that Vitamin C is also called ascorbic acid.
- . Show slides 26 and 27 of the "How Food Affects You" slide set or pages 20-22 of the "How Food Affects You" flip charts to illustrate the following functions of Vitamin C in the body:
  - Helps hold body cells together and strengthens walls of blood vessels.
  - Helps in healing wounds.
  - Helps resist infection
- . Have aides compare the ascorbic acid content of the following foods. Use Bulletin 72, Nutritive Value of Foods.



brussel sprouts	oranges
collards	grapefruit
mustard greens	strawberries
green peppers	tomatoes
potatoes	cauliflower
turnip greens	cantaloupe
broccoli	cabbage

apples	pears
bananas	beets
watermelons	celery
peaches	corn

- . Have aides group foods from both lists above into columns under these headings--best, good, and poor sources. This could be a reference for the aide to use with homemakers.
- . Discuss precautions against loss of Vitamin C in cooking and storing.
- . Use display of food to help aides determine low-cost sources of Vitamin C foods. Consider other foods: fruit drinks to which Vitamin C has been added, and fruits and vegetables in season.
- . Have aides tell of other foods with which they are familiar that may be sources of Vitamin C.
- . Have aides role-play ways of convincing homemakers to use low-cost Vitamin C foods.

## APPLICATION OF LESSON BY AIDES

Aides help homemakers understand the importance of Vitamin C in the diet.

Aides select dietary recalls from several homemakers and evaluate for Vitamin C.

Aides plan with homemakers ways to include low-cost Vitamin C foods in families' diets.

## REFERENCES FOR TRAINER AGENT

1. Food, Yearbook of Agriculture, 1959, USDA, pp. 150-161.
2. Eat to Live, Wheat Flour Institute, p. 19.
3. Nutritive Value of Foods, USDA, G-72.

## VISUALS AND EQUIPMENT

Foods for display.

"How Food Affects You" slide set, C-156, USDA.

Slide projector and screen.

## REFERENCES FOR AIDES

1. How Food Affects You flip charts, USDA.
2. Key Nutrients, PA-691, USDA.
3. Nutritive Value of Foods, G-72, USDA.
4. Food - A Key to Better Health, Nutrition Foundation, p.5.
5. Family Fare, G1, USDA, p. 12.

## KEY NUTRIENTS

### Lesson 10: VITAMIN D

#### PURPOSE

Trainer agent to help aides:

1. Learn the functions of Vitamin D in the body.
2. Learn sources of Vitamin D and how to obtain the recommended amounts.

#### PRESENTATION

- . Refer to the leaflet Key Nutrients and discuss functions of Vitamin D in the body. Point out that:
  - The first formation of bone is known as cartilage.
  - Calcium and phosphorus are the minerals that cause the cartilage to harden into bone.
  - When Vitamin D is not present in the diet, cartilage does not harden completely, resulting in soft curved bones, bowed legs, or knock knees. This disease is known as rickets.
- . Show a picture of a child with rickets and point out deformities of bone structure.
- . Show slides 30 and 31 from "How Food Affects You" slide set. Emphasize:
  - Infants and children need Vitamin D for growth.
  - Adults need small amounts of Vitamin D to keep bones and teeth healthy.
  - Pregnant and lactating women need additional amounts to ensure healthy babies and to protect their own bodies.

- . Point out food sources of Vitamin D:
  - Salt water fish, herring, mackerel, and canned salmon and sardines are sources. Egg yolk and liver contain Vitamin D in varying amounts.
  - Milk is generally not a good source unless it is fortified with Vitamin D. Read labels for Vitamin D content.
  - Cod-liver oil and halibut-liver oil are excellent sources of both Vitamin A and Vitamin D.
  - Human skin contains a fat which is transferred into Vitamin D when it is exposed to the ultraviolet rays of direct sunlight. Clouds, fog, dust and clothes interfere with the absorption of these ultraviolet rays.
- . Discuss amounts of Vitamin D needed. Vitamin D is required throughout the growth period. The amount recommended is 400 USP units per day from infancy through age 22. The requirement for pregnant and lactating women is the same as for growing children. Enough Vitamin D can generally be obtained by drinking amounts of milk recommended in the Daily Food Guide.
  - Since Vitamin D is fat-soluble and is stored in the body, excessive amounts can be harmful. Toxic effects, including loss of appetite, vomiting, diarrhea and drowsiness, appear in children consuming massive amounts. Toxic effects do not result from Vitamin D in foods.
  - Concentrated forms of all vitamins should be prescribed by a physician.

## APPLICATION OF LESSON BY AIDES

Aides check with young mothers to see if children are drinking Vitamin D milk and are being exposed to sunshine.

Aides visit local markets to determine availability of Vitamin D milk and report findings at later training meetings.

## REFERENCES FOR TRAINER AGENT

1. Food For Us All, Yearbook of Agriculture, 1969, USDA, pp. 258-259.
2. Food, Yearbook of Agriculture, 1959, USDA. pp. 130-138.
3. Milk in Family Meals, G-127, USDA.
4. Principles of Nutrition, Wilson, Fisher and Fuqua, pp. 225-233.

## VISUALS AND EQUIPMENT

Picture of a child with rickets.

"How Food Affects You" slide set, C-156, USDA.

Projector and screen.

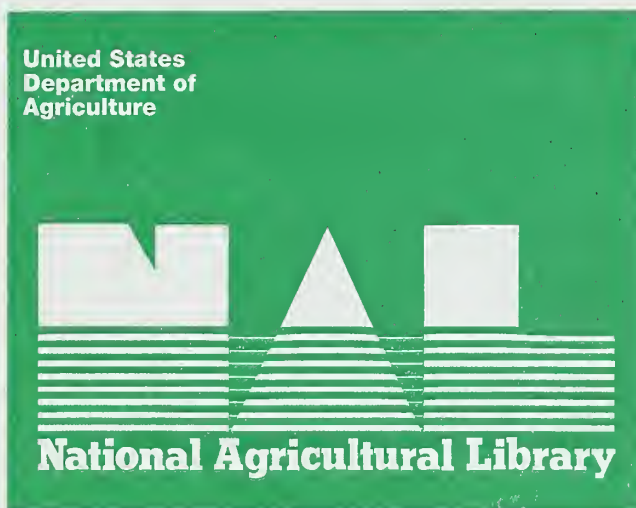
Milk cans, boxes, and cartons.

## REFERENCES FOR AIDES

1. Key Nutrients, PA-691, USDA.
2. Food - A Key to Better Health, Nutrition Foundation pp. 4-5.
3. Family Fare, G1, USDA, p. 12.

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